

PowerAfrica[⚡] 2012 Conference

Intelligent Grid Integration of Renewable Energy Resources



9-13th July

The University of the Witwatersrand, Science Stadium, West Campus, Johannesburg

Tutorial:

IEEE CSI Business Development Workshop

CSI-NGO Partnership Plan & Roadmap

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Outline

- I. Brief Summary of CSI Africa Workshop
- II. Partnership Formation
- III. CSI Organization for Partnerships
- IV. CSI-NGO Partnership Agreements
- V. CSI For-Profits Technical Support
- VI. NGO Consortium Formation
- VII. Future Roadmap Development
- VIII. Conclusion
- IX. Acknowledgments



Lighting Up The World

- Sustainability
- Scalable Energy
- Community Empowerment



Help Light Up The World

Development teams experiment with wind and manual power generation for low-cost battery charging and lighting solutions.



new
SAC

*Back Row: Martin Niboh, Michael Wilson, Ray Larsen, Mou Riiny, Ron Moulton
Middle Row: Michelle Lacourciere, Daniel Wessner, Albe Larsen
Front: Ifeanyi Orajaka, Paul Lacourciere
Missing: Henry Louie, Peter Dauenhauer*



L to R: Henry Louie, Mou, Riiny, Ron Moulton, Pat Ryan, Albe Larsen, Noel Schulz, Patrick Lee (back), Ray :Larsen, Ifeanyi Orajaka (back), Peter Dauenhauer, Dan Wessner



Power

I. Brief Summary CSI Power Africa Workshop

- Purpose

- Introduce new NGOs in Africa to Sirona-Haiti business model

- Stresses market-based sustainable business via local entrepreneurship
- Shares details of cooperative seed funding stage IEEE CSI with Nonprofit NGO Sirona Cares
- Shares details of forming for-profit in-country entity to raise bridge funding and major growth plan funding
- Baseline goal for all new NGO partners: Bring basic electricity to at least 1M people in 1st 5 years

I. Workshop Summary 2

- Workshop Results
 - Three new NGOs agreed to pursue full partnership, IEEE CSI seed funding
 - Two established NGO nonprofits eager to develop for-profit community energy business (South Sudan, Cameroon)
 - One new for-profit energy business with non-profit partner support (Nigeria)
 - Note: 4th energy NGO applicant from Nigeria unable to attend - visa approval not received in time

. Workshop Summary 3

- Establishing Broader Partnership Context
 - Major result of workshop was framing future partnership goals by *Community* needs and choices, not simply establishing narrow profit-making electricity or other business from outside
 - Help communities find own voices in *leading development of solutions to their own problems*
 - Three necessary legs of partnership are *Incubation, Demonstration, Education* (IDE for the 90%, Dan Wessner is a leading developer)

I. Workshop Summary 4

- IDE90
 - Using CSI Example (D. Wessner diagram)
 - *Incubation*: HTC led to CSI led to development of new idea, product, seed funding donations
 - *Demonstration*: CSI partnership with Sirona-Haiti led to sustainable business model, building prototypes, deployment of new franchise business, start of in-country manufacturing
 - *Education*: SunBlazer demonstration gives new opportunity in community for *affordable higher education*
 - Model: Local cohort classes led by in-country specialists plus web-based global education networks

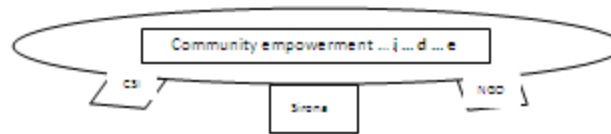
Workshop Summary 5

- IDE90 Goals Summary:
 - Develop affordable incubation, seed pilots, business demonstration models
 - Electricity, interconnectivity, clean water, sanitation, clinics, classrooms, etc.
 - Develop affordable higher education models
 - Eliminate higher education poverty long-term
 - Grow communities' ability to self govern, grow capabilities
 - MacArthur Foundation supports developing new curriculum accreditation model for student cost of \$2500 per year c.f. typical Ivy League \$50,000 or more

IDE90 Details

CSI-NGO Model

D. Wessner



CSI – INCUBATE (i)	Sirona Model – DEMONSTRATE (d)	NGO holism – EDUCATE (e)
Capacity building with engineers: Community Solutions Initiative (CSI) is a humanitarian incubation (i) project of engineers; they design radically affordable “off-grid” goods and services for the Base-of-Pyramid (BOP). CSI is part of PES (Power & Energy Society - 30,000 members), the largest group of IEEE (Institute of Electrical and Electronics Engineers), whose 400,000+ members make it the largest international professional organization.	Capacity building with local entrepreneurs in developing countries: each partnership in a country studies and works with Sirona-Hell (the local business arm of CSI’s designs) which demonstrates (d) local supply and value chain profits, benefits, and scalability; the business plan for each successive country applying CSI goods and services explains its strategy for reaching 1 M+ customers with just and sustainable goods and services.	Capacity building with community leaders and educators: NGOs facilitate the synergistic partnership of these engineers and BOP community entrepreneurs; they educate (e) more broadly to build human capacity and engage indigenous populations in the process of empowerment; they avoid “alphabetism” ... whereby global south partners have historically been trained narrowly (“just the basic ABCs”) to play a role in another’s global north enterprise.
Smart D-20 applications (design for the D20) funded by IEEE and PES dues, are done design work, corporate social responsibility, and venture capital.	Local S-20 supply/value chain (radical business practices and profits for the D20) creating a virtuous cycle of local funding through sales of goods and services.	Integrated S-20 education (blended learning form and for the D20), linking communities online, in-class, and via D-20 incubation and S-20 enterprises), requiring startup funds but later relying on fee-paying students.
Metrics of success: # of engaged professional engineers, # of workable and radically affordable off-grid designs, and capacity across the IEEE/PES/CSI membership ... and other engineering groups – Engineers Without Borders (EWB) as well as Engineers for Change (E4C).	Metrics of success: sales, profits, satisfied customers, trained operators (at various stages of the local supply and value chain), and communities with sustained access to power and other basic goods and services (filtered and agricultural water, internet connectivity, biogas, wind, mod records).	Metrics of success: Has the community an integrated handle on equity, sustainability, interdependence, holism, and liberation, such that men and women, children and adults, and members of different socio-political groups are engaged in this process of change?
D-20: medical records, biogas, wind, Wi-Fi, reliable electricity, income generation, agricultural water and storage, and connectivity (internet or telephonic).	S-20: modeling sustainable and radically affordable services and products to off-grid communities and districts, eventually affecting nationwide economics.	S-20: elementary, secondary, and more advanced modules, applied learning, and degree-learning work in just and sustainable development for and from communities “on the front lines of change”.
CSI directs incubator terms and presents possibilities via planning sessions with communities, in itself an additional level of grassroots incubation.	Sirona-Hell , team demonstrates its model and vets potential new enterprises in Africa, India, and South America; these new partners, in turn, become demonstrators in their own culture, economy, and ecology.	An INGO (perhaps EWB or IDE) may serve as the coordinator for educating and setting up further levels of education linking BOP partners, classes, and communities.
Key actors: IEEE, PES, CSI, engineering and design corporations, and venture capital (plus impact investment funds) in design collaboration with communities.	Key actors: Sirona-Hell and successive partners beyond hell ... for-profit local enterprises plus non-profit NGOs – again linking communities and outside actors.	Key actors: Selected universities and instructors, reciprocal teaching from communities in the throes of change, Denver INGOs – EWB, ICATIS, CTIR and IDE, 21 st C education philanthropy, corporate in-kind support (CSCD, Prometheus), and CSI.
Professional not-for-profits	Local and national for-profits	INGOs & universities that are not-for-profit

Dan Wessner, JD, PhD (17 July 2012), in response to CSI teamwork at Power Africa 2012 Conference, University of Witwatersrand, South Africa (13-17 July 2012)

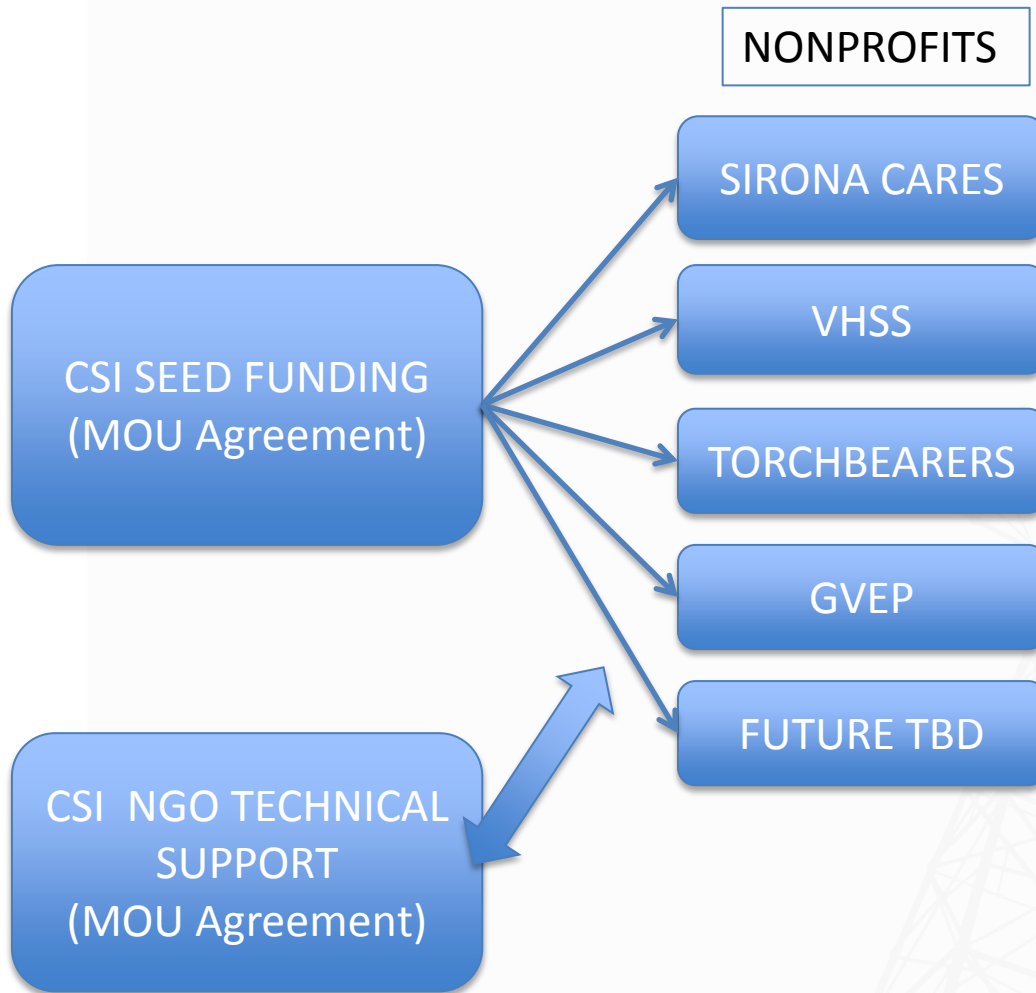
II. Partnership Formation

- Sirona-Haiti Model
 - CSI is nonprofit under IEEE nonprofit
 - Sirona Cares (SC) is nonprofit supported by for-profit Sirona Fuels (biofuels) in Oakland, California
 - IEEE CSI seed-funded units donated to nonprofit SC
 - Meanwhile for-profit Sirona-Haiti (SH) developed, incorporated in Haiti to run franchise businesses in Haiti, start manufacturing
 - M. Lacourciere, Director of SC, is SH CEO
 - P. Lacourciere, President of Sirona Fuels, is SH COO

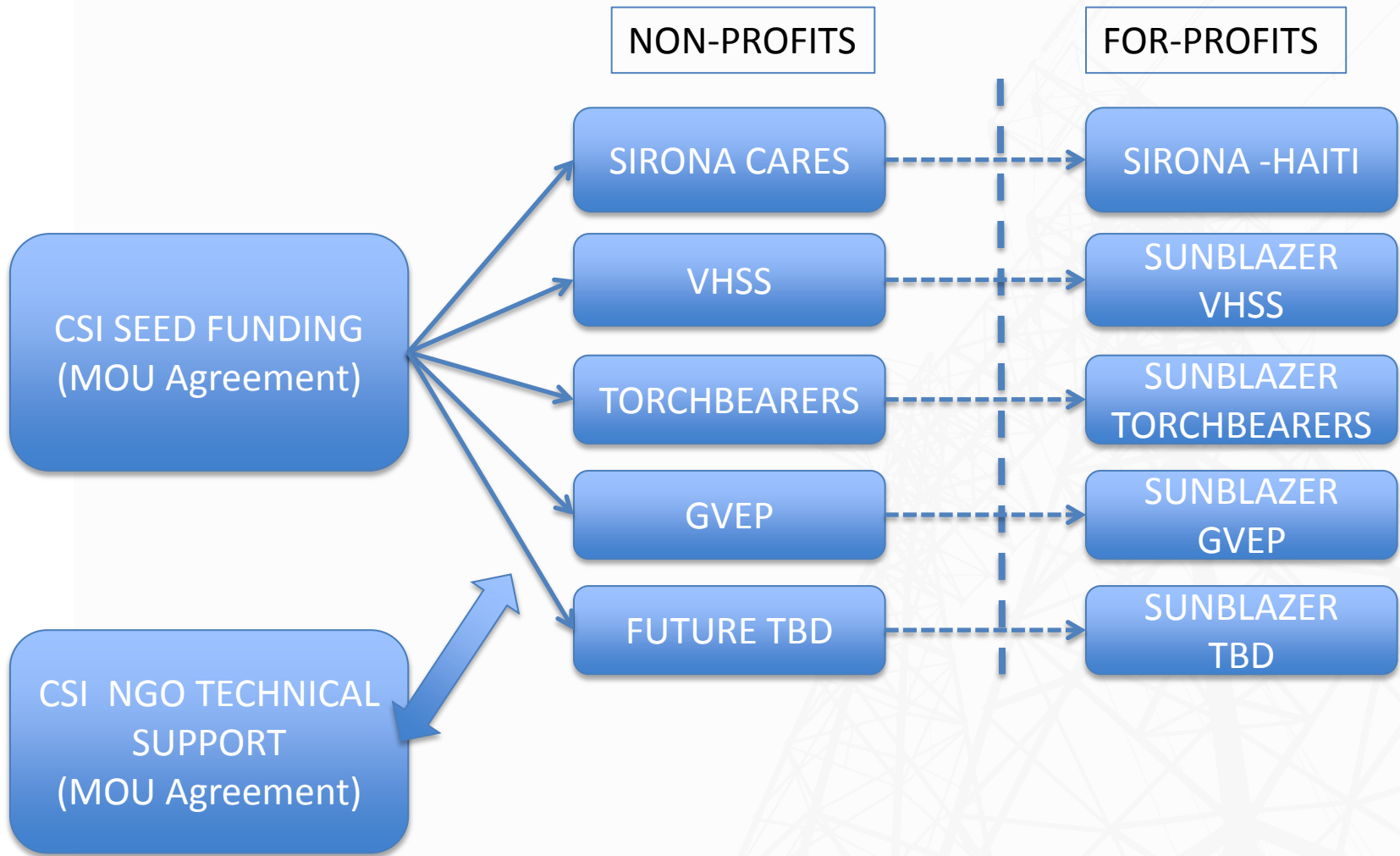
II. Partnership Formation 2

- Following SH model:
 - IEEE CSI will partner with nonprofit NGO to provide seed funding for startup SunBlazer (or equivalent product or products)
 - NGO begins seed business, forms parallel in-country for-profit to eventually take ownership of seed units
 - New for-profit tied to NGO; pledges to follow community empowerment model, grow to reach a million or more people, raise major funding to leverage seed units to maximum community benefit
- Organizational steps shown in next 2 slides

II. CSI-NGO Organization Stage 1



II. CSI-NGO Organization Stage 2



II. Partnership Formation Between NGOs

Joint NGO Partnerships

“Not everybody needs to be a manufacturer”



II. Partnership Formation 3

- New Partner Applicants at Workshop:
 - Village Help South Sudan, VHSS, NGO
 - Principals: Ron Moulton, Mou Riiny
 - Torchbearer Foundation, Cameroon, NGO
 - Principals: Martin Niboh, Michael Wilson
 - Green Village Energy Project, GVEP, Nigeria
 - For Profit community energy modeled on CSI
 - Principal: Ifeanyi Orajaka, Member CSI

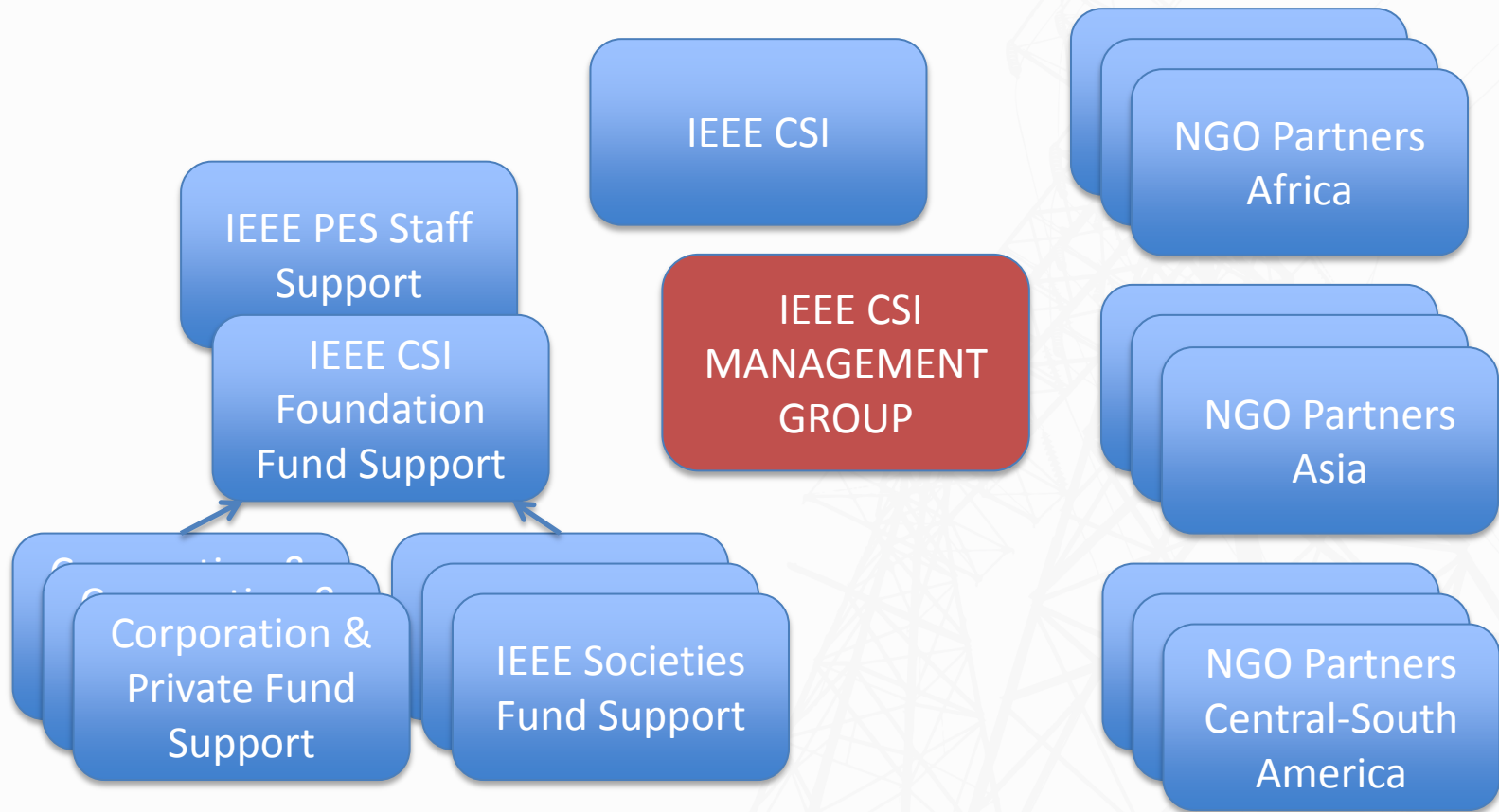
New Partners (L to R): Ronald Moulton, Mou Riiny, VHSS, South Sudan; Ifeanyi Orajaka, Founder, GVEP, Nigeria; Martin Niboh, Founder & President, Michael Wilson, COO, TBF, Cameroon



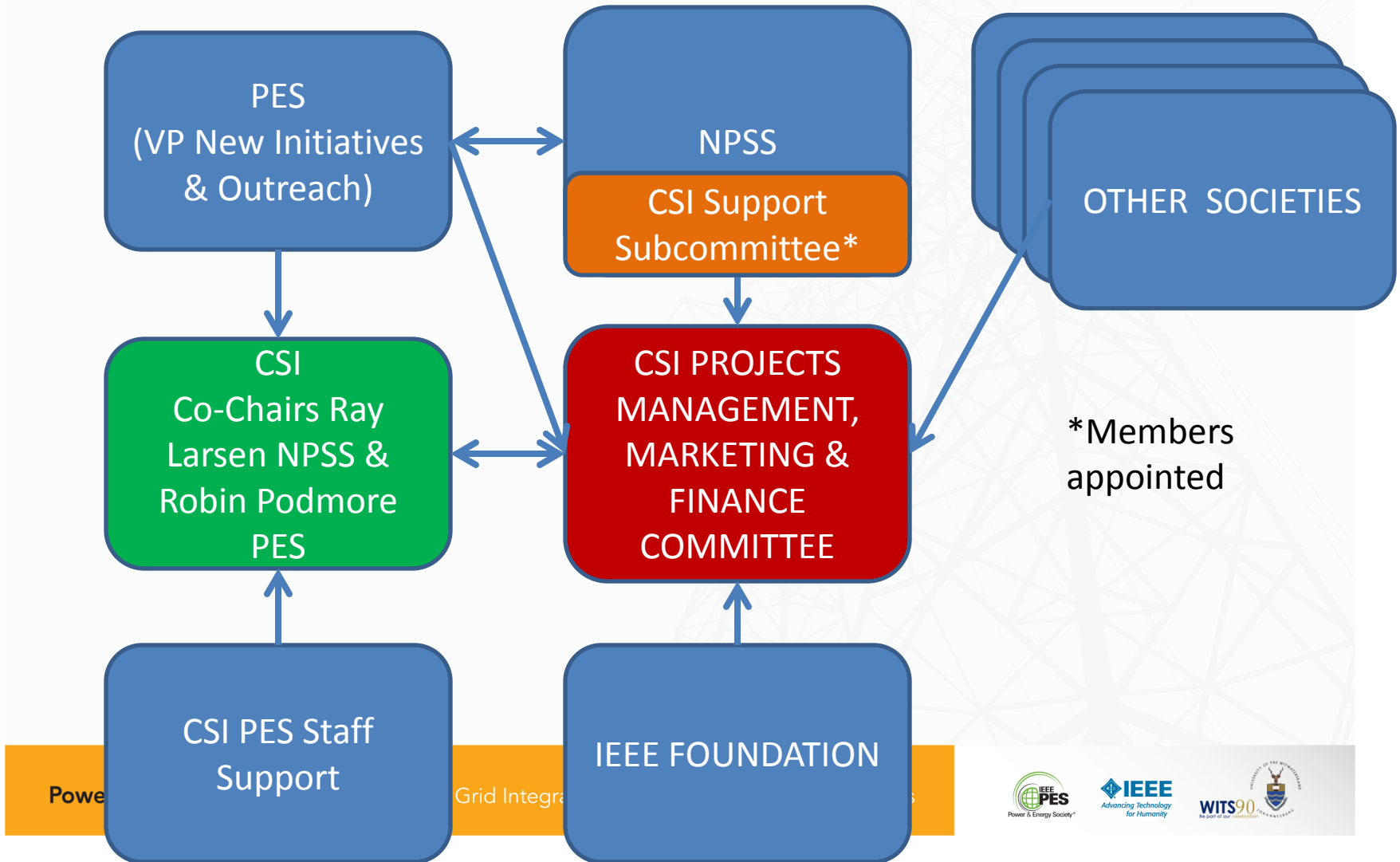
III. CSI Organization for Partnerships

- New developments started
 - Outlined by P. Lee, P. Ryan
 - Expanded in discussions
 - Following are initial thoughts on areas to be covered in expanding organization to deal with growing number of NGO partnerships

III. CSI-NGO Future Partnerships



III. CSI IEEE Relationships



III. CSI Subcommittee Structure (Preliminary)



IV. CSI-NGO Agreements

- CSI agreements with Nonprofit (MOU)
 - Pledges by both parties
 - Best efforts performance
 - CSI: Seed fundraising, technical support
 - NGO: Execute pilot as Nonprofit; forms For-Profit for future bridge grants, bank loans or investment funding to take to scale
 - On completion of Pilot, Nonprofit owns units
 - On completion of for-profit organization ownership transfers to For-Profit
 - If fails at Nonprofit stage CSI will help organize re-deployment elsewhere

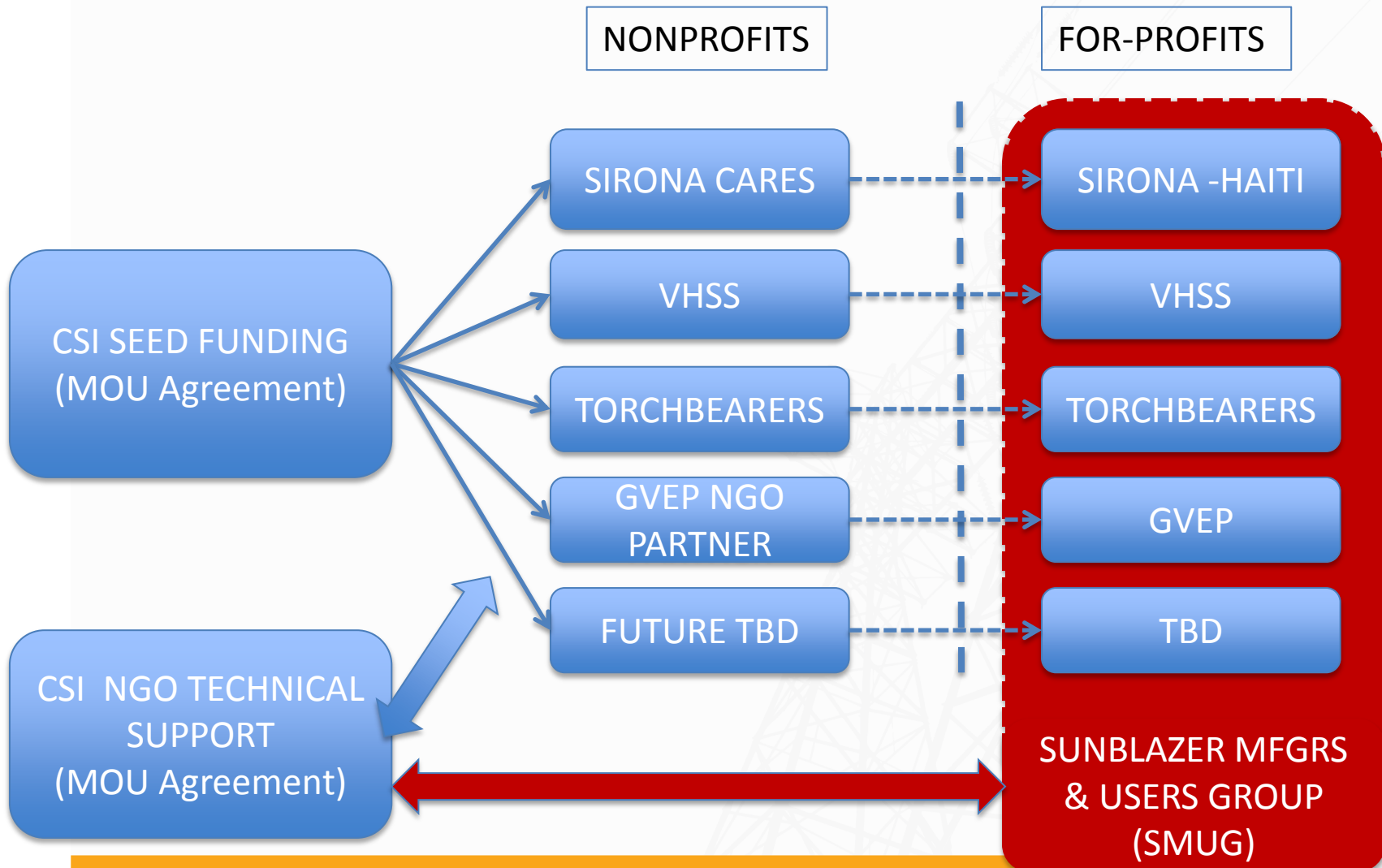
V. CSI For-Profits Technical Support

- *CSI Pro-Bono* Support Extended
 - For-Profits will require extensions, upgrades to products
 - To maintain IEEE open-source viability, support teams need to continue to be engaged
 - Coordinate needs from all NGOs to maintain efficient designs, high standards

VI. NGO Consortium Formation

- New NGO-NGO Agreement Forged
 - Independent of CSI management
 - Agreement between 4 partners to fast-track new startups
 - Leverage business strengths developed by CSI-Sirona over past 3 years
 - Sirona-Haiti can be quick source for seed-funded units if needed
 - Suggested consortium already had first meeting Friday July 20th & will meet weekly as needed
 - CSI-Consortium relationship depicted on next slide

VI. CSI-NGO Consortium Relationship



VI. CSI Consortium Support

- SunBlazer Manufacturers & Users Group (SMUG)
 - Consortium is nonprofit w/ open-source sharing goals
 - SMUG will enable CSI to continue lending *pro-bono* technical support, communicate with all parties openly, equally
 - SMUG gives group much greater strength in management, fundraising, global visibility as group championing global community empowerment, sustainable development, IDE90 shared goals
 - IEEE CSI can continue to support with *pro-bono* design, open-source repository, problem analysis advice, training, upgrades, future enhancement initiatives etc.

VII. Roadmap Development

- Short Term
 - Four Roadmaps Need Detailing
 - 1) Partnership management structure for CSI
 - 2) Partnership agreement formalities IEEE
 - 3) SMUG consortium description for NGO partners
 - 4) New load application enhancements for SunBlazer operators and users requiring CSI design help

VII. Roadmap Development 2

Item 4): New Load Development Roadmap (Draft)

Future Load Growth

Usage	2012	2013	2014	2015	2016	2017	2018	2019
Home Lighting Cell/Radio	Red							
Home TV/Laptop		Red						
Interconnectivity		Red						
School /Labs		Red	Red					
IDE90 Learning Center		Red	Red	Red				
Refrigeration coolers			Red					
Refrigeration freezers			Red	Red				
50kW Station Comm'l.				Red	Red			

VII. Roadmap Development 3

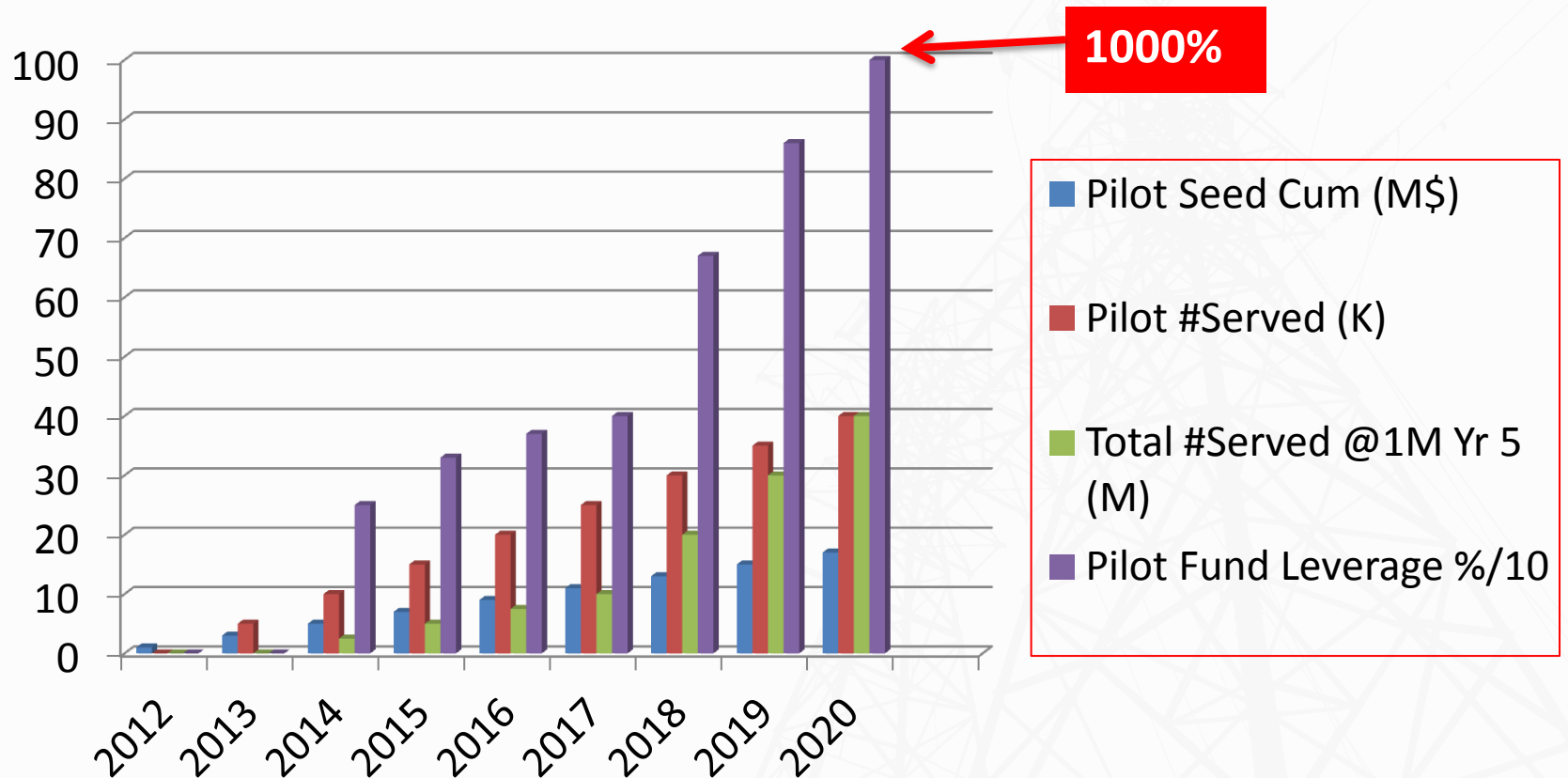
- Long Term
 - 1) Develop NGO partnerships at pace of at least 10 per year
 - 2) Develop profiles and information packets
 - 3) Seek donations to IEEE Foundation CSI Fund for specific NGOs, geographical regions
 - 4) Target nominally \$200,000 per startup for 10 SunBlazers per year = \$2M/yr

VII. Roadmap Development 4

- CSI Executive Summary Proposal
 - Global goal 10 new startups per year

Startup # / \$M	Yr0 2012 \$M	Yr1 2013 \$M	Yr2 2014 \$M	Yr3 2015 \$M	Yr4 2016 \$M	Yr5 2017 \$M	Yr6 2018 \$M	Yr7 2019 \$M	Yr8 2020 \$M
1-10	1	1							
11-20		1	1						
21-30			1	1					
31-40				1	1				
41-50					1	1			
51-60						1	1		
61-70							1	1	
71-80								1	1
81-90									1
\$M /Year	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
\$M Cumulative	1.0	3.0	5.0	7.0	9.0	11.0	13.0	15.0	17.0
# Served by Pilot alone	0	5000	10000	15000	20000	25000	30000	35000	40000
# Served @ 1M by Yr5	0	0	2.5M	5M	7.5M	10M	20M	30M	40M
# Served Fund Leverage %	0	0	250	333	375	400	666	857	1000

VII. Roadmap Development 5



VII. Roadmap Development 6

- Keys to accelerating growth
 - Develop pools of qualified NGOs in all target areas
 - Increase demand for seed funding with ready candidates
 - Co-Opt other foundations to adopt IEEE model (e.g. 5 or more)
 - Leverage rate of growth with NGO Consortium stressing open source, community empowerment, sustainable, education, jobs not charity
 - Maintain clear role of all players with IEEE, EWB, E4C all providing pro bono core support, adaptation to future technologies

VIII. Conclusions

- Workshop major accomplishments
 - Beginning formal relationship with 3 new energy NGOs in Africa
 - Framing CSI efforts in broader context of IDE90 including vital educational goals
 - Formalizing cooperation between NGOs for maximum leveraging of Haiti investment
 - Major progress defining CSI's organizational roadmap as well as NGO-NGO collaboration
- All participants deserve credit for extraordinary efforts and outcomes

VIII. Conclusions 2

- Future Roadmap
 - Success depends on expanding pool of NGOs, organizing CSI to handle, NGO consortium assisting new startups
 - Growth beyond IEEE funding capacity requires expanding vision of other Foundations to adopt IEEE technical-business models
 - CSI by adopting IDE90 goals and collaboration well positioned for next steps of fundraising for launching first class of 10 NGOs in 2012

IX: Acknowledgments

- Michael Grant and Pat Naidoo of Power Africa 2012 hosted the meeting and made it possible.
- PES President Noel Schulz graciously gave CSI a plug in her main conference Plenary Talk, chaired our opening session, gave an introductory talk and attended several workshop sessions.
- Pat Ryan, PES Executive Director attended several sessions and provided excellent guidance on crafting CSI organizational goals.
- Albe Larsen coordinated the large posters and information table throughout the meetings.
- Special thanks to all the speakers who made the long trip to participate and lend their enormous expertise.
- Peter Dauenhauer with help from Henry Louie videotaped the entire proceedings except for the last closeout, which will be a rich resource for future workshops
- Michael Grant will post all talks to the Power Africa 2012 website and these will also be a useful archive on the CSI website.